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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/781,794

02/20/2004

Youhei Nagahama

042120

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38834 7590 12/13/2005

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EXAMINER

BREWSTER, WILLIAM M

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 12/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/781,794

Applicant(s)

NAGAHAMA ET AL.

Examiner

William M. Brewster

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) 3-7 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 2 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 022004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Species I: claims 1-2 in the reply filed on 14 November 2005 is acknowledged.

Claims 3-7 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 14 November 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murakami Noriko JP Publication No. 09-116050 A, from the IDS in view of Chia et al., US Patent No. 6,081,997, translation enclosed.

Noriko teaches limitations from claim 1, a manufacturing method of a semiconductor device, comprising the steps of: in fig. 2, providing a rigid substrate 21 which supports one or more semiconductor elements 22 on a surface of the substrate and with resin encapsulation, so that a vent-end edge portion of the substrate corresponding to a vent end of the encapsulation mold has a thickness 27 smaller than

a thickness of other portions of the substrate; injecting resin into a cavity between the upper mold and the substrate to encapsulate the semiconductor elements with the resin 24, p. 2, ¶ 9;

limitations from claim 2, the manufacturing method of claim 1, in fig. 2, wherein the substrate is provided so that only apart of the vent-end edge portion 27 of the substrate has a thickness smaller than the thickness of the other portions of the substrate 21.

Noriko does not specify using a molding with vents, but Chia does. Chia teaches limitations from claim 1, a manufacturing method of a semiconductor device, comprising the steps of : in figs. 1-3, providing a rigid substrate 14 which supports one or more semiconductor elements 12 on a surface of the substrate and is clamped between an upper mold 26 and a lower mold 20 of an encapsulation mold at a time of resin encapsulation, so that a vent-end edge portion of the substrate corresponding to a vent end of the encapsulation mold, 30A-B; disposing the substrate in the encapsulation mold; and injecting resin 32 into a cavity between the upper mold and the substrate, in fig. 3 to encapsulate the semiconductor elements with the resin;

limitations from claim 2, the manufacturing method of claim 1, in fig. 2, wherein the substrate is provided so that only apart of the vent-end edge portion, 30A-B are on both ends of the structure, col. 5, line 64 - col. 7, line 30.

Chia gives motivation in col. 3, lines 10 - 25. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Chia's process with Norika's invention would have been beneficial because the number of voids in the underfill is reduced.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 571-272-1854. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



9 December 2005
WB